

REMARKS

Response To Restriction Requirement

Applicant respectfully traverses the restriction requirement set forth in the Office Action dated January 4, 2006.

In the Office Action, the Examiner sets forth a restriction requirement between two separate inventions. As asserted by the Examiner, Group I, claims 1-10, is drawn to a classifier, and is classified in class 209, subclass 138. Group II, claims 11-15, is drawn to a method, and is classified in class 241, subclass 79.

The Examiner further sets forth an election of species requirement should the claims of Group I be elected for prosecution and asserts there are two separate species of invention. As asserted by the Examiner, species I, Figure 3, reads on claims 1-5, 7, 8 and 10, and species II, Figure 4, reads on claims 6 and 9. The Examiner indicated that claim 1 was generic to both species.

The Examiner contends that the inventions of Groups I and II are patentably distinct because they are related as process and apparatus for its practice, and have acquired a separate status in the art due to their different classification such that the searches are not coextensive, requiring separate examination. These contentions are respectfully traversed.

Applicant notes that the inventions of Groups I and II are so closely related in the field of classifying particles that a proper search of any of the claims would, of necessity, require a search of the others. Thus, it is submitted that all of the claims can be searched simultaneously, and that a duplicative search, with possibly inconsistent results, may occur if the restriction requirement is maintained.

Applicant further submits that any nominal burden placed upon the Examiner to search an additional subclass or two, necessary to determine the art relevant to Applicant's overall invention is significantly outweighed by the public interest in not having to obtain and study several separate patents in order to have available all of the issued patent claims covering Applicant's invention. The alternative is to proceed with the filing of multiple applications, each consisting of generally the same disclosure, and each being subjected to essentially the same search, perhaps by different Examiners on different occasions. This places an unnecessary burden on both the Patent and Trademark Office and on Applicant.

In the interest of economy, for the Office, for the public-at-large and for Applicant, reconsideration and withdrawal of the election and restriction requirements are requested.

Nevertheless, in order to comply with the requirements of 37 CFR 1.143, Applicant confirms the provisional election, with traverse, to prosecute the invention of Group I, namely, claims 1-5, 7, 8 and 10. Inasmuch as claim 1 is generic, Applicant also requests that claims 6 and 9 be rejoined in this grouping.

Amendment

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

A new abstract has been presented in accordance with preferred practice. No new matter has been added by this change.

Claims 1-15 are now presented for consideration. Claims 1 and 11 are independent. Claims 1-15 have been amended to clarify features of the subject invention. Support for these changes can be found in the original application, as filed. Therefore, no new matter has been added.

Applicant notes with appreciation that claims 5 and 7 have been indicated as containing allowable subject matter and would be allowed if rewritten in independent form and to overcome the rejection under 35 U.S.C. § 112, second paragraph, below. Applicant earnestly believes, however, that he should be entitled to the protection afforded by independent claim 1, as presented. Therefore, claims 5 and 7 have not been so rewritten at this time.

Applicant requests favorable reconsideration and withdrawal of the objection and rejections set forth in the above-noted Office Action.

Claims 2-5, 7, 8 and 10 were objected to due to a minor informality. These claims have been amended as recommended by the Examiner. Accordingly, this objection has become moot and should be withdrawn. Such favorable indication is requested.

Claims 1-5, 7, 8 and 10 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Examiner asserts that the phrase “the other portion” lacks antecedent basis. Applicant submits that one having ordinary skill in the art would readily understand this term, when

read in light of the subject disclosure. Therefore, this rejection is respectfully traversed. Nevertheless, to expedite prosecution, claim 1 has been amended in light of the Examiner's comments to read "the second portion" Applicant submits that this amendment overcomes the rejection under 35 U.S.C. § 112, second paragraph. Such favorable indication also is requested.

Turning now to the art rejections, claims 1-4, 8 and 10 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,597,537 to Misaka et al. Claims 1-4 and 8 also were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,884,776 to Piepho et al. Applicant submits that the cited art does not teach or suggest many features of the present invention, as previously recited in these claims. Therefore, these rejections are respectfully traversed. Nevertheless, Applicant submits that independent claims 1 and 11, for example, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 1 recites a classifier for separating coarse particles from a stream of gas and particles discharged from a vertical mill. The classifier includes a generally cylindrical outer casing having a vertical axis and a vertically oriented sidewall disposed on the mill, an inner casing arranged within the outer casing, providing an annular passageway between the inner casing and the sidewall through which the stream of gas and particles flows upwardly, a ring, supported about the axis, comprising a plurality of circumferentially-spaced static vanes forming angled ports for imparting rotational motion to the stream of gas and particles flowing through the ports for centrifugally separating a first portion of coarse particles, thereby producing a remaining stream of gas and particles, a wheel, supported for rotation about the vertical axis, including a plurality of circumferentially-spaced radially extending blades, and a passageway for

guiding the remaining stream of gas and particles inside the wheel for allowing the remaining stream to flow radially outwardly through openings formed between the blocks, so as to accelerate the rotational motion of the remaining stream for separating a second portion of coarse particles, thereby producing a final stream of gas and particles to be discharged from the classifier. The first portion of coarse particles and the second portion of coarse particles are discharged from the classifier through an outlet for separated particles.

By such an arrangement, in the present invention, a one-directional dynamic classifier is provided, in which a rotating wheel is used, not to prevent coarse particles from entering from outside through the rotating vanes, as in prior designs, but to acceleration both fine and coarse particles by guiding them radially outwardly between the blades of the rotating wheel, in order to improve the centrifugal separation of different sizes of the particles.

Applicant submits that the cited art does not teach or suggest such features of the present invention, as recited in independent claims 1 and 11.

The Examiner relies on the Misaka et al. and Piepho et al. patents for each teaching a classifier for separating coarse particles from a stream of gas and particles discharged from a vertical mill, the classifier including a generally cylindrical outer casing, an inner casing arranged within the outer casing to provide an annular passageway between the inner casing and a sidewall of the outer casing through which a stream of gas and particles flows upwardly, a ring including circumferentially-spaced static vanes forming angled ports for imparting rotational motion to the stream of gas and particles flowing through the ports and a wheel supported for rotation about the vertical axis, the wheel including radially extending blades for accelerating the rotational motion of the remaining stream.

Applicant submits, however, that the Misaka et al. and Piepho et al. patents each teaches guiding a stream of gas and particles radially inwardly between blades of a rotating wheel. Applicant submits, therefore, that the arrangements in those patents are contrary to the present invention, in which both fine and coarse particles are accelerated by guiding them radially outwardly between blades of a rotating wheel, in order to improve centrifugal separation of different sizes of the particles. Applicant submits, therefore, that the cited art fails to teach or suggest salient features of Applicant's present invention, as recited in the independent claims. Therefore, that art should not be read to anticipate or render obvious Applicant's present invention, as recited in those claims.

For the foregoing reasons, Applicant submits that the present invention, as recited in independent claims 1 and 11, is patentably defined over the art of record.

Dependent claims 2-10 and 12-15 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicant submits that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the objection and rejections set forth in the above-noted Office Action and an early Notice of Allowance are also requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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